Ballfields Parcels at DoDHF Novato, CA
Data Validation Reports
LDC# 13575

Explosives

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Ballfields Parcels at DoDHF Novato, CA

Collection Date: April 5, 2005

LDC Report Date: June 14, 2005

Matrix: Soil

Parameters: Explosives

Validation Level: NFESC Level III & IV

Laboratory: Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): K2502499

Sample Identification

TO63-191-SB03-0-0.5
TO63-191-SB01-0-0.5**
TO63-191-SB02-0-0.5
TO63-193-SB01-0-0.5
TO63-193-SB03-0-0.5
TO63-193-SB03-0-0.5Dup
TO63-193-SB02-0-0.5
TO63-191-SB03-0-0.5MS
TO63-191-SB03-0-0.5MSD

** Indicates sample underwent EPA Level IV review

Introduction

This data review covers 9 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8330 for Explosives.

The review follows the Final Sampling and Analysis Plan for Preliminary Assessment/Site Investigation of Ballfields Parcels at DoDHF Novato, California, (March 23, 2005) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified a P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

Samples indicated by a double asterisk on the front cover underwent NFESC Level IV review. NFESC Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by NFESC Level III criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

Introduction

This data review covers 9 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8330 for Explosives.

The review follows the Final Sampling and Analysis Plan for Preliminary Assessment/Site Investigation of Ballfields Parcels at DoDHF Novato, California, (March 23, 2005) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified a P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

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A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

a. Initial Calibration

Initial calibration of compounds was performed for the primary (quantitation) column and confirmation column as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

Retention times (RT) of all compounds in the calibration standards were within QC limits for samples on which NFESC Level IV review was performed. Raw data were not evaluated for the samples on which a NFESC Level III review was performed.

b. Calibration Verification

Calibration verification was performed at the required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 15.0% QC limits.

Retention times (RT) of all compounds in the calibration standards were within QC limits for samples on which NFESC Level IV review was performed. Raw data were not evaluated for the samples on which a NFESC Level III review was performed.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No explosive contaminants were found in the method blanks with the following exceptions:

Method Blank ID	Extraction Date	Compound	Concentration	Associated Samples
KWG0506067-4	4/14/05	2-Nitrotoluene	0.11 mg/Kg	All samples in SDG K2502499

Sample concentrations were compared to concentrations detected in the method blanks. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated method blanks with the following exceptions:

Sample	Compound	Reported Concentration	Modified Final Concentration
TO63-193-SB02-0-0.5	2-Nitrotoluene	0.12 mg/Kg	2.3U mg/Kg

IV. Accuracy and Precision Data

a. Surrogate Recovery

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

b. Matrix Spike/(Matrix Spike) Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

c. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

V. Target Compound Identification

All target compound identifications were within validation criteria for samples on which NFESC Level IV review was performed. Raw data were not evaluated for the samples reviewed by NFESC Level III criteria.

VI. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria for samples on which NFESC Level IV review was performed. Raw data were not evaluated for the samples reviewed by NFESC Level III criteria.

VII. System Performance

The system performance was within validation criteria for samples on which NFESC Level IV review was performed. Raw data were not evaluated for the samples reviewed by NFESC Level III criteria.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report.

IX. Field Duplicates

Samples TO63-193-SB03-0-0.5 and TO63-193-SB03-0-0.5Dup were identified as field duplicates. No explosives were detected in any of the samples with the following exceptions:

Compound	Concentration (mg/Kg)		RPD
	TO63-193-SB03-0-0.5	TO63-193-SB03-0-0.5Dup	
HMX	2.5U	0.69	200
2,6-Dinitrotoluene	2.5U	0.20	200

X. Field Blanks

No field blanks were identified in this SDG.

Ballfields Parcels at DoDHF Novato, CA
Explosives - Data Qualification Summary - SDG K2502499

No Sample Data Qualified in this SDG

Ballfields Parcels at DoDHF Novato, CA
Explosives - Laboratory Blank Data Qualification Summary - SDG K2502499

SDG	Sample	Compound	Modified Final Concentration	A or P
K2502499	TO63-193-SB02-0-0.5	2-Nitrotoluene	2.3U mg/Kg	A

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Battelle Memorial Institute
Project: Novato Ballfields/G486063
Sample Matrix: Soil

Service Request: K2502499
Date Collected: 04/05/2005
Date Received: 04/07/2005

Nitroaromatics and Nitramines (Explosives)

Sample Name: T063-191-SB03-0-0.5
Lab Code: K2502499-001

Extraction Method: METHOD
Analysis Method: 8330

Units: mg/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
HMX	**0.23**	JN	2.2	0.077	1	04/14/05	04/17/05	KWG0506067	
RDX	ND	U	2.2	0.11	1	04/14/05	04/17/05	KWG0506067	
1,3,5-Trinitrobenzene	ND	U	2.2	0.072	1	04/14/05	04/17/05	KWG0506067	
1,3-Dinitrobenzene	ND	U	2.2	0.061	1	04/14/05	04/17/05	KWG0506067	
TETRYL	ND	U	2.2	0.092	1	04/14/05	04/17/05	KWG0506067	
Nitrobenzene	ND	U	2.2	0.083	1	04/14/05	04/17/05	KWG0506067	
4-Amino-2,6-dinitrotoluene	ND	U	2.2	0.086	1	04/14/05	04/17/05	KWG0506067	
2-Amino-4,6-dinitrotoluene	ND	U	2.2	0.11	1	04/14/05	04/17/05	KWG0506067	
2,4,6-Trinitrotoluene	ND	U	2.2	0.090	1	04/14/05	04/17/05	KWG0506067	
2,6-Dinitrotoluene	ND	U	2.2	0.11	1	04/14/05	04/17/05	KWG0506067	
2,4-Dinitrotoluene	ND	U	2.2	0.064	1	04/14/05	04/17/05	KWG0506067	
2-Nitrotoluene	ND	U	2.2	0.11	1	04/14/05	04/17/05	KWG0506067	
4-Nitrotoluene	ND	U	2.2	0.14	1	04/14/05	04/17/05	KWG0506067	
3-Nitrotoluene	ND	U	2.2	0.12	1	04/14/05	04/17/05	KWG0506067	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1-Chloro-3-nitrobenzene	93	67-119	04/17/05	Acceptable

6/17/05

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Battelle Memorial Institute
Project: Novato Ballfields/G486063
Sample Matrix: Soil

Service Request: K2502499
Date Collected: 04/05/2005
Date Received: 04/07/2005

Nitroaromatics and Nitramines (Explosives)

Sample Name: T063-191-SB01-0-0.5
Lab Code: K2502499-002

Extraction Method: METHOD
Analysis Method: 8330

Units: mg/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
HMX	ND	U	2.3	0.076	1	04/14/05	04/17/05	KWG0506067	
RDX	ND	U	2.3	0.11	1	04/14/05	04/17/05	KWG0506067	
1,3,5-Trinitrobenzene	ND	U	2.3	0.070	1	04/14/05	04/17/05	KWG0506067	
1,3-Dinitrobenzene	ND	U	2.3	0.060	1	04/14/05	04/17/05	KWG0506067	
TETRYL	ND	U	2.3	0.090	1	04/14/05	04/17/05	KWG0506067	
Nitrobenzene	ND	U	2.3	0.082	1	04/14/05	04/17/05	KWG0506067	
4-Amino-2,6-dinitrotoluene	ND	U	2.3	0.084	1	04/14/05	04/17/05	KWG0506067	
2-Amino-4,6-dinitrotoluene	ND	U	2.3	0.11	1	04/14/05	04/17/05	KWG0506067	
2,4,6-Trinitrotoluene	ND	U	2.3	0.089	1	04/14/05	04/17/05	KWG0506067	
2,6-Dinitrotoluene	ND	U	2.3	0.11	1	04/14/05	04/17/05	KWG0506067	
2,4-Dinitrotoluene	ND	U	2.3	0.063	1	04/14/05	04/17/05	KWG0506067	
2-Nitrotoluene	ND	U	2.3	0.11	1	04/14/05	04/17/05	KWG0506067	
4-Nitrotoluene	ND	U	2.3	0.13	1	04/14/05	04/17/05	KWG0506067	
3-Nitrotoluene	ND	U	2.3	0.12	1	04/14/05	04/17/05	KWG0506067	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1-Chloro-3-nitrobenzene	88	67-119	04/17/05	Acceptable

4/17/05

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Battelle Memorial Institute
Project: Novato Ballfields/G486063
Sample Matrix: Soil

Service Request: K2502499
Date Collected: 04/05/2005
Date Received: 04/07/2005

Nitroaromatics and Nitramines (Explosives)

Sample Name: T063-191-SB02-0-0.5
Lab Code: K2502499-003

Extraction Method: METHOD
Analysis Method: 8330

Units: mg/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
HMX	ND	U	2.5	0.088	1	04/14/05	04/17/05	KWG0506067	
RDX	ND	U	2.5	0.12	1	04/14/05	04/17/05	KWG0506067	
1,3,5-Trinitrobenzene	ND	U	2.5	0.081	1	04/14/05	04/17/05	KWG0506067	
1,3-Dinitrobenzene	ND	U	2.5	0.069	1	04/14/05	04/17/05	KWG0506067	
TETRYL	ND	U	2.5	0.11	1	04/14/05	04/17/05	KWG0506067	
Nitrobenzene	ND	U	2.5	0.095	1	04/14/05	04/17/05	KWG0506067	
4-Amino-2,6-dinitrotoluene	ND	U	2.5	0.097	1	04/14/05	04/17/05	KWG0506067	
2-Amino-4,6-dinitrotoluene	ND	U	2.5	0.12	1	04/14/05	04/17/05	KWG0506067	
2,4,6-Trinitrotoluene	ND	U	2.5	0.11	1	04/14/05	04/17/05	KWG0506067	
2,6-Dinitrotoluene	ND	U	2.5	0.13	1	04/14/05	04/17/05	KWG0506067	
2,4-Dinitrotoluene	ND	U	2.5	0.073	1	04/14/05	04/17/05	KWG0506067	
2-Nitrotoluene	ND	U	2.5	0.12	1	04/14/05	04/17/05	KWG0506067	
4-Nitrotoluene	ND	U	2.5	0.15	1	04/14/05	04/17/05	KWG0506067	
3-Nitrotoluene	ND	U	2.5	0.14	1	04/14/05	04/17/05	KWG0506067	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1-Chloro-3-nitrobenzene	88	67-119	04/17/05	Acceptable

4/17/05

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Battelle Memorial Institute
Project: Novato Ballfields/G486063
Sample Matrix: Soil

Service Request: K2502499
Date Collected: 04/05/2005
Date Received: 04/07/2005

Nitroaromatics and Nitramines (Explosives)

Sample Name: T063-193-SB01-0-0.5
Lab Code: K2502499-004

Extraction Method: METHOD
Analysis Method: 8330

Units: mg/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
HMX	ND	U	2.6	0.092	1	04/14/05	04/17/05	KWG0506067	
RDX	ND	U	2.6	0.13	1	04/14/05	04/17/05	KWG0506067	
1,3,5-Trinitrobenzene	ND	U	2.6	0.085	1	04/14/05	04/17/05	KWG0506067	
1,3-Dinitrobenzene	ND	U	2.6	0.072	1	04/14/05	04/17/05	KWG0506067	
TETRYL	ND	U	2.6	0.11	1	04/14/05	04/17/05	KWG0506067	
Nitrobenzene	ND	U	2.6	0.099	1	04/14/05	04/17/05	KWG0506067	
4-Amino-2,6-dinitrotoluene	ND	U	2.6	0.11	1	04/14/05	04/17/05	KWG0506067	
2-Amino-4,6-dinitrotoluene	ND	U	2.6	0.13	1	04/14/05	04/17/05	KWG0506067	
2,4,6-Trinitrotoluene	ND	U	2.6	0.11	1	04/14/05	04/17/05	KWG0506067	
2,6-Dinitrotoluene	ND	U	2.6	0.13	1	04/14/05	04/17/05	KWG0506067	
2,4-Dinitrotoluene	ND	U	2.6	0.077	1	04/14/05	04/17/05	KWG0506067	
2-Nitrotoluene	ND	U	2.6	0.13	1	04/14/05	04/17/05	KWG0506067	
4-Nitrotoluene	ND	U	2.6	0.16	1	04/14/05	04/17/05	KWG0506067	
3-Nitrotoluene	ND	U	2.6	0.14	1	04/14/05	04/17/05	KWG0506067	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1-Chloro-3-nitrobenzene	88	67-119	04/17/05	Acceptable

6/17/05

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Battelle Memorial Institute	**Service Request:**	K2502499
Project:	Novato Ballfields/G486063	**Date Collected:**	04/05/2005
Sample Matrix:	Soil	**Date Received:**	04/07/2005

Nitroaromatics and Nitramines (Explosives)

Sample Name:	T063-193-SB03-0-0.5	**Units:**	mg/Kg
Lab Code:	K2502499-005	**Basis:**	Dry
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	8330		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
HMX	ND	U	2.5	0.086	1	04/14/05	04/17/05	KWG0506067	
RDX	ND	U	2.5	0.12	1	04/14/05	04/17/05	KWG0506067	
1,3,5-Trinitrobenzene	ND	U	2.5	0.079	1	04/14/05	04/17/05	KWG0506067	
1,3-Dinitrobenzene	ND	U	2.5	0.067	1	04/14/05	04/17/05	KWG0506067	
TETRYL	ND	U	2.5	0.11	1	04/14/05	04/17/05	KWG0506067	
Nitrobenzene	ND	U	2.5	0.092	1	04/14/05	04/17/05	KWG0506067	
4-Amino-2,6-dinitrotoluene	ND	U	2.5	0.095	1	04/14/05	04/17/05	KWG0506067	
2-Amino-4,6-dinitrotoluene	ND	U	2.5	0.12	1	04/14/05	04/17/05	KWG0506067	
2,4,6-Trinitrotoluene	ND	U	2.5	0.10	1	04/14/05	04/17/05	KWG0506067	
2,6-Dinitrotoluene	ND	U	2.5	0.13	1	04/14/05	04/17/05	KWG0506067	
2,4-Dinitrotoluene	ND	U	2.5	0.071	1	04/14/05	04/17/05	KWG0506067	
2-Nitrotoluene	ND	U	2.5	0.12	1	04/14/05	04/17/05	KWG0506067	
4-Nitrotoluene	ND	U	2.5	0.15	1	04/14/05	04/17/05	KWG0506067	
3-Nitrotoluene	ND	U	2.5	0.13	1	04/14/05	04/17/05	KWG0506067	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1-Chloro-3-nitrobenzene	85	67-119	04/17/05	Acceptable

4/17/05

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Battelle Memorial Institute	**Service Request:**	K2502499
Project:	Novato Ballfields/G486063	**Date Collected:**	04/05/2005
Sample Matrix:	Soil	**Date Received:**	04/07/2005

Nitroaromatics and Nitramines (Explosives)

Sample Name:	T063-193-SB03-0-0.5 DUP	**Units:**	mg/Kg
Lab Code:	K2502499-006	**Basis:**	Dry
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	8330		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
HMX	**0.69**	JN	2.7	0.088	1	04/14/05	04/17/05	KWG0506067	
RDX	ND	U	2.7	0.12	1	04/14/05	04/17/05	KWG0506067	
1,3,5-Trinitrobenzene	ND	U	2.7	0.082	1	04/14/05	04/17/05	KWG0506067	
1,3-Dinitrobenzene	ND	U	2.7	0.069	1	04/14/05	04/17/05	KWG0506067	
TETRYL	ND	U	2.7	0.11	1	04/14/05	04/17/05	KWG0506067	
Nitrobenzene	ND	U	2.7	0.095	1	04/14/05	04/17/05	KWG0506067	
4-Amino-2,6-dinitrotoluene	ND	U	2.7	0.098	1	04/14/05	04/17/05	KWG0506067	
2-Amino-4,6-dinitrotoluene	ND	U	2.7	0.12	1	04/14/05	04/17/05	KWG0506067	
2,4,6-Trinitrotoluene	ND	U	2.7	0.11	1	04/14/05	04/17/05	KWG0506067	
2,6-Dinitrotoluene	**0.20**	JN	2.7	0.13	1	04/14/05	04/17/05	KWG0506067	
2,4-Dinitrotoluene	ND	U	2.7	0.073	1	04/14/05	04/17/05	KWG0506067	
2-Nitrotoluene	ND	U	2.7	0.12	1	04/14/05	04/17/05	KWG0506067	
4-Nitrotoluene	ND	U	2.7	0.15	1	04/14/05	04/17/05	KWG0506067	
3-Nitrotoluene	ND	U	2.7	0.14	1	04/14/05	04/17/05	KWG0506067	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1-Chloro-3-nitrobenzene	85	67-119	04/17/05	Acceptable

6/17/05

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Battelle Memorial Institute
Project: Novato Ballfields/G486063
Sample Matrix: Soil

Service Request: K2502499
Date Collected: 04/05/2005
Date Received: 04/07/2005

Nitroaromatics and Nitramines (Explosives)

Sample Name: T063-193-SB02-0-0.5
Lab Code: K2502499-007

Extraction Method: METHOD
Analysis Method: 8330

Units: mg/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
HMX	ND	U	2.3	0.075	1	04/14/05	04/17/05	KWG0506067	
RDX	ND	U	2.3	0.099	1	04/14/05	04/17/05	KWG0506067	
1,3,5-Trinitrobenzene	ND	U	2.3	0.069	1	04/14/05	04/17/05	KWG0506067	
1,3-Dinitrobenzene	ND	U	2.3	0.059	1	04/14/05	04/17/05	KWG0506067	
TETRYL	ND	U	2.3	0.089	1	04/14/05	04/17/05	KWG0506067	
Nitrobenzene	ND	U	2.3	0.081	1	04/14/05	04/17/05	KWG0506067	
4-Amino-2,6-dinitrotoluene	ND	U	2.3	0.083	1	04/14/05	04/17/05	KWG0506067	
2-Amino-4,6-dinitrotoluene	ND	U	2.3	0.11	1	04/14/05	04/17/05	KWG0506067	
2,4,6-Trinitrotoluene	ND	U	2.3	0.088	1	04/14/05	04/17/05	KWG0506067	
2,6-Dinitrotoluene	ND	U	2.3	0.11	1	04/14/05	04/17/05	KWG0506067	
2,4-Dinitrotoluene	ND	U	2.3	0.063	1	04/14/05	04/17/05	KWG0506067	
2-Nitrotoluene	**0.12**	JN 2,3U	2.3	0.10	1	04/14/05	04/17/05	KWG0506067	
4-Nitrotoluene	ND	U	2.3	0.13	1	04/14/05	04/17/05	KWG0506067	
3-Nitrotoluene	ND	U	2.3	0.12	1	04/14/05	04/17/05	KWG0506067	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1-Chloro-3-nitrobenzene	88	67-119	04/17/05	Acceptable

6/17/05

Comments:

LDC #: 13575B40
SDG #: K2502499
Laboratory: Columbia Analytical Services

VALIDATION COMPLETENESS WORKSHEET
Level III/IV

Date: 6/13/05
Page: 1 of 1
Reviewer: Q
2nd Reviewer: Q

METHOD: HPLC Explosives (EPA SW 846 Method 8330)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 4/5/05
IIa.	Initial calibration	A	
IIb.	Calibration verification	A	
III.	Blanks	SW	
IVa.	Surrogate recovery	A	
IVb.	Matrix spike/Matrix spike duplicates	A	
IVc.	Laboratory control samples	A	LCS
V.	Target compound identification	A	Not reviewed for Level III validation.
VI.	Compound Quantitation and CRQLs	A	Not reviewed for Level III validation.
VII.	System Performance	A	Not reviewed for Level III validation.
VIII.	Overall assessment of data	A	
IX.	Field duplicates	SW	D = 5+6
X.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

All Soils

1	TO63-191-SB03-0-0.5	11	KWG0506067-1	21		31	
2	TO63-191-SB01-0-0.5**	12		22		32	
3	TO63-191-SB02-0-0.5	13		23		33	
4	TO63-193-SB01-0-0.5	14		24		34	
5	TO63-193-SB03-0-0.5	15		25		35	
6	TO63-193-SB03-0-0.5Dup	16		26		36	
7	TO63-193-SB02-0-0.5	17		27		37	
8	TO63-191-SB03-0-0.5MS	18		28		38	
9	TO63-191-SB03-0-0.5MSD	19		29		39	
10		20		30		40	

Notes: _____

LDC #: 13575B70
SDG #: K2502499

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: 9

Method: ✓ GC _____ HPLC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Was a linear fit used for evaluation? If yes, were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation? If Yes, what was the acceptance criteria used?		✓		
Did the initial calibration meet the curve fit acceptance criteria?			✓	
Were the RT windows properly established?	✓			
IV. Continuing calibration				
What type of continuing calibration calculation was performed? ✓ %D or %R	✓			
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 15%.0 or percent recoveries 85-115%?	✓			
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.	✓			
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?	✓			
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			

LDC #: 18575B40
SDG #: E25024J9

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: JA

Validation Area	Yes	No	NA	Findings/Comments
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Were field duplicate pairs identified in this SDG?	✓			
Were target compounds idetected in the field duplicates?	✓			
XV. Field blanks				
Were field blanks identified in this SDG?		✓		
Were target compounds detected in the field blanks?			✓	

VALIDATION FINDINGS WORKSHEET

METHOD: ___GC ✓ HPLC

8310	8330	8151	8021B	
A. Acenaphthene	A. HMX	A. 2,4-D	V. Benzene	
B. Acenaphthylene	B. RDX	B. 2,4-DB	CC. Toluene	
C. Anthracene	C. 1,3,5-Trinitrobenzene	C. 2,4,5-T	EE. Ethyl Benzene	
D. Benzo(a)anthracene	D. 1,3-Dinitrobenzene	D. 2,4,5-TP	SSS. O-Xylene	
E. Benzo(a)pyrene	E. Tetryl	E. Dinoseb	RRR. MP-Xylene	
F. Benzo(b)fluoranthene	F. Nitrobenzene	F. Dichlorprop	GG. Total Xylene	
G. Benzo(g,h,i)perylene	G. 2.4.6-Trinitrotoluene	G. Dicamba	LL. MTBE	
H. Benzo(k)fluoranthene	H. 4-Amino-2,6-dinitrotoluene	H. Dalapon		
I. Chrysene	I. 2-Amino-4,6-dinitrotoluene	I. MCPP		
J. Dibenz(a,h)anthracene	J. 2,4-Dinitrotolune	J. MCPA		
K. Fluoranthene	K. 2,6-Dinitrotoluene	K. Pentachlorophenol		
L. Fluorene	L. 2-Nitrotoluene	L.		
M. Indeno(1,2,3-cd)pyrene	M. 3-Nitrotoluene	M.		
N. Naphthalene	N. 4-Nitrotoluene			
O. Phenanthrene	O.			
P. Pyrene	P.			
Q.	Q			
R.				
S.				

Notes: _____

LDC #: 13573B40
SDG #: K2502499

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: A
2nd Reviewer: R

METHOD: GC HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were all samples associated with a given method blank?
Y N N/A Was a method blank performed for each matrix and whenever a sample extraction procedure was performed?
Y N N/A Was a method blank performed with each extraction batch?
Y N N/A Were any contaminants found in the method blanks? If yes, please see findings below.

Level IV/D Only

Y N N/A (Gasoline and aromatics only)Was a method blank analyzed with each 24 hour batch?
Y N N/A Was a method blank analyzed for each analytical / extraction batch of ≤20 samples?

Blank extraction date: 4/14/05 **Blank analysis date:** 4/16/05 **Associated samples:** ALL

Conc. units: MS/KG

Compound	Blank ID	Sample Identification						
	KWG050607-4	7						
2	0.11	0.12/2.34						

Blank extraction date: _____ **Blank analysis date:** _____ **Associated samples:** _____

Conc. units: _____

Compound	Blank ID	Sample Identification						

ALL CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

LDC #: 13553B40
SDG #: K2502499

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: 9
2nd reviewer: 2

METHOD: ✓ GC __ HPLC

Y N N/A Were field duplicate pairs identified in this SDG?

Y N N/A Were target compounds detected in the field duplicate pairs?

Compound	Concentration (ng/kg)		%RPD	Qualification
	5	6	Limit ≤_____	Parent only / All Samples
A	2.5U	0.69	200	
K	↓	0.20	✓	

Compound	Concentration ( )		%RPD	Qualification
			Limit ≤_____	Parent only / All Samples

LDC #: 13575B40
SDG #: K502199

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: 1
2nd Reviewer: 2

METHOD: GC ____ HPLC ✓

The calibration Factor (CF), average CF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

CF = A/C
average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

A = Area of compound,
C = Concentration of compound,
S = Standard deviation of the CF
X = Mean of the CFs

#	Standard ID	Calibration Date	Compound	Reported CF (/ std)	Recalculated CF (/ std)	Reported Average CF (initial)	Recalculated Average CF (initial)	Reported %RSD	Recalculated %RSD
1	1EAC	3/18/05	HMX	88400	88400	90800	90800	10.2	10.2
			2,4,6-TNT	252000	252000	257000	257000	5.4	5.4
2									
3									
4									

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13575B40
SDG #: K0202499

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 8

METHOD: GC_____HPLC ✓

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. CF - CF)/ave. CF
CF = A/C

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(Ical)/ CCV Conc.	Reported CF/Conc. CCV	Recalculated CF/Conc. CCV	Reported %D	Recalculated %D
1	04160027	4/16/05	HMX	90800	92000	920000	/	/
			2.4.6-TNT	25700 U	255000	25	/	/
2	04160039	4/16/05	HMX	90800	92100	921000	/	/
			2.4.6-TNT	25700 U	257000	257000	/	/
3								
4								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13575B40
SDG #: K2502499

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: 9

METHOD: ___ GC ✓ HPLC

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 2

Surrogate	Column/~~Detector~~	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
1-chloro-3-nitrobenzene	~~RTX~~ C18	2.5	2.19	88	88	0

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

LDC #: 13573B40
SDG #: K2502499

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Page: 1 of 1
Reviewer: 7
2nd Reviewer: 8

METHOD: ___ GC ✓ HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC - SC)/SA Where SSC = Spiked sample concentration SA = Spike added SC = Sample concentration

RPD =(({SSCMS - SSCMSD} * 2) / (SSCMS + SSCMSD))*100 MS = Matrix spike MSD = Matrix spike duplicate

MS/MSD samples: 8/9

Compound	Spike Added (ug/kg)		Sample Conc. (ug/kg)	Spike Sample Concentration (ug/kg)		Matrix spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	---	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)											
Diesel (8015)											
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)	31.2	31.2	ND	26.9	27.8	86	86	89	89	3	3
2,4,6-Trinitrotoluene (8330)	↓	↓	↓	27.2	28.3	87	87	91	91	4	4

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 135T5B40
SDG #: 480249 9

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: ___ GC ✓HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC - SC)/SA

Where SSC = Spiked sample concentration
SA = Spike added
SC = Sample concentration
LCS = Laboratory Control Sample
LCSD = Laboratory Control Sample duplicate

RPD =(((SSCLCS - SSCLCSD} * 2) / (SSCLCS + SSCLCSD))*100

LCS/LCSD samples: KWG0506067-3

Compound	Spike Added (ug/L)		Sample Conc. (ug/L)	Spike Sample Concentration (ug/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	---	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)											
Diesel (8015)											
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)	25	NA	~~23.4~~ -	23.4	& NA	94	94				
2,4,6-Trinitrotoluene (8330)	↓	↓	-	23.3	↓	93	93				

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13575B40
SDG #: K050249

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: Q
2nd Reviewer: R

METHOD: ___ GC ✓ HPLC

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10% of the reported results?

Concentration= (A)(Fv)(Df) / (RF)(Vs or Ws)(%S/100)

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound In the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID. 2 Compound Name NO

Concentration = _____

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications

Comments: _____

SAMPCALew.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Ballfields Parcels at DoDHF Novato, CA

Collection Date: April 5, 2005

LDC Report Date: June 14, 2005

Matrix: Water

Parameters: Explosives

Validation Level: NFESC Level III & IV

Laboratory: Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): K2502575

Sample Identification

TO63-193-GW01-Dup
TO63-193-GW01
TO63-191-GW01**

** Indicates sample underwent EPA Level IV review

Introduction

This data review covers 3 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8330 for Explosives.

The review follows the Final Sampling and Analysis Plan for Preliminary Assessment/Site Investigation of Ballfields Parcels at DoDHF Novato, California, (March 23, 2005) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified a P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

Samples indicated by a double asterisk on the front cover underwent NFESC Level IV review. NFESC Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by NFESC Level III criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

a. Initial Calibration

Initial calibration of compounds was performed for the primary (quantitation) column and confirmation column as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

Retention times (RT) of all compounds in the calibration standards were within QC limits for samples on which NFESC Level IV review was performed. Raw data were not evaluated for the samples on which a NFESC Level III review was performed.

b. Calibration Verification

Calibration verification was performed at the required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 15.0% QC limits.

Retention times (RT) of all compounds in the calibration standards were within QC limits for samples on which NFESC Level IV review was performed. Raw data were not evaluated for the samples on which a NFESC Level III review was performed.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No explosive contaminants were found in the method blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

b. Matrix Spike/(Matrix Spike) Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

c. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

V. Target Compound Identification

All target compound identifications were within validation criteria for samples on which NFESC Level IV review was performed. Raw data were not evaluated for the samples reviewed by NFESC Level III criteria.

VI. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria for samples on which NFESC Level IV review was performed. Raw data were not evaluated for the samples reviewed by NFESC Level III criteria.

VII. System Performance

The system performance was within validation criteria for samples on which NFESC Level IV review was performed. Raw data were not evaluated for the samples reviewed by NFESC Level III criteria.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report.

IX. Field Duplicates

Samples TO63-193-GW01-Dup and TO63-193-GW01 were identified as field duplicates. No explosives were detected in any of the samples.

X. Field Blanks

No field blanks were identified in this SDG.

Ballfields Parcels at DoDHF Novato, CA
Explosives - Data Qualification Summary - SDG K2502575

No Sample Data Qualified in this SDG

Ballfields Parcels at DoDHF Novato, CA
Explosives - Laboratory Blank Data Qualification Summary - SDG K2502575

No Sample Data Qualified in this SDG

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Battelle Memorial Institute
Project: Novato Ballfields/G486063
Sample Matrix: Water

Service Request: K2502571
Date Collected: 04/05/2005
Date Received: 04/08/2005

Nitroaromatics and Nitramines (Explosives)

Sample Name: TO63-193-GW01-DUP
Lab Code: K2502571-013

Extraction Method: EPA 3535
Analysis Method: 8330

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
HMX	ND	U	2.0	0.46	1	04/12/05	04/14/05	KWG0505923	
RDX	ND	U	2.0	0.38	1	04/12/05	04/14/05	KWG0505923	
1,3,5-Trinitrobenzene	ND	U	2.0	0.38	1	04/12/05	04/14/05	KWG0505923	
1,3-Dinitrobenzene	ND	U	2.0	0.27	1	04/12/05	04/14/05	KWG0505923	
TETRYL	ND	U	2.0	0.37	1	04/12/05	04/14/05	KWG0505923	
Nitrobenzene	ND	U	2.0	0.45	1	04/12/05	04/14/05	KWG0505923	
4-Amino-2,6-dinitrotoluene	ND	U	2.0	0.53	1	04/12/05	04/14/05	KWG0505923	
2-Amino-4,6-dinitrotoluene	ND	U	2.0	0.46	1	04/12/05	04/14/05	KWG0505923	
2,4,6-Trinitrotoluene	ND	U	2.0	0.50	1	04/12/05	04/14/05	KWG0505923	
2,6-Dinitrotoluene	ND	U	2.0	0.39	1	04/12/05	04/14/05	KWG0505923	
2,4-Dinitrotoluene	ND	U	2.0	0.32	1	04/12/05	04/14/05	KWG0505923	
2-Nitrotoluene	ND	U	2.0	0.32	1	04/12/05	04/14/05	KWG0505923	
4-Nitrotoluene	ND	U	2.0	0.50	1	04/12/05	04/14/05	KWG0505923	
3-Nitrotoluene	ND	U	2.0	0.34	1	04/12/05	04/14/05	KWG0505923	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1-Chloro-3-nitrobenzene	66	52-135	04/14/05	Acceptable

6/19/05

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Battelle Memorial Institute	**Service Request:**	K2502571
Project:	Novato Ballfields/G486063	**Date Collected:**	04/05/2005
Sample Matrix:	Water	**Date Received:**	04/08/2005

Nitroaromatics and Nitramines (Explosives)

Sample Name:	TO63-193-GW01	**Units:**	ug/L
Lab Code:	K2502571-014	**Basis:**	NA
Extraction Method:	EPA 3535	**Level:**	Low
Analysis Method:	8330		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
HMX	ND	U	2.0	0.46	1	04/12/05	04/14/05	KWG0505923	
RDX	ND	U	2.0	0.38	1	04/12/05	04/14/05	KWG0505923	
1,3,5-Trinitrobenzene	ND	U	2.0	0.38	1	04/12/05	04/14/05	KWG0505923	
1,3-Dinitrobenzene	ND	U	2.0	0.27	1	04/12/05	04/14/05	KWG0505923	
TETRYL	ND	U	2.0	0.37	1	04/12/05	04/14/05	KWG0505923	
Nitrobenzene	ND	U	2.0	0.45	1	04/12/05	04/14/05	KWG0505923	
4-Amino-2,6-dinitrotoluene	ND	U	2.0	0.53	1	04/12/05	04/14/05	KWG0505923	
2-Amino-4,6-dinitrotoluene	ND	U	2.0	0.46	1	04/12/05	04/14/05	KWG0505923	
2,4,6-Trinitrotoluene	ND	U	2.0	0.50	1	04/12/05	04/14/05	KWG0505923	
2,6-Dinitrotoluene	ND	U	2.0	0.39	1	04/12/05	04/14/05	KWG0505923	
2,4-Dinitrotoluene	ND	U	2.0	0.32	1	04/12/05	04/14/05	KWG0505923	
2-Nitrotoluene	ND	U	2.0	0.32	1	04/12/05	04/14/05	KWG0505923	
4-Nitrotoluene	ND	U	2.0	0.50	1	04/12/05	04/14/05	KWG0505923	
3-Nitrotoluene	ND	U	2.0	0.34	1	04/12/05	04/14/05	KWG0505923	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1-Chloro-3-nitrobenzene	56	52-135	04/14/05	Acceptable

6/19/05

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Battelle Memorial Institute
Project: Novato Ballfields/G486063
Sample Matrix: Water

Service Request: K2502571
Date Collected: 04/05/2005
Date Received: 04/08/2005

Nitroaromatics and Nitramines (Explosives)

Sample Name: TO63-191-GW01
Lab Code: K2502571-015

Extraction Method: EPA 3535
Analysis Method: 8330

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
HMX	ND	U	2.0	0.46	1	04/12/05	04/14/05	KWG0505923	
RDX	ND	U	2.0	0.38	1	04/12/05	04/14/05	KWG0505923	
1,3,5-Trinitrobenzene	ND	U	2.0	0.38	1	04/12/05	04/14/05	KWG0505923	
1,3-Dinitrobenzene	ND	U	2.0	0.27	1	04/12/05	04/14/05	KWG0505923	
TETRYL	ND	U	2.0	0.37	1	04/12/05	04/14/05	KWG0505923	
Nitrobenzene	ND	U	2.0	0.45	1	04/12/05	04/14/05	KWG0505923	
4-Amino-2,6-dinitrotoluene	ND	U	2.0	0.53	1	04/12/05	04/14/05	KWG0505923	
2-Amino-4,6-dinitrotoluene	ND	U	2.0	0.46	1	04/12/05	04/14/05	KWG0505923	
2,4,6-Trinitrotoluene	ND	U	2.0	0.50	1	04/12/05	04/14/05	KWG0505923	
2,6-Dinitrotoluene	ND	U	2.0	0.39	1	04/12/05	04/14/05	KWG0505923	
2,4-Dinitrotoluene	ND	U	2.0	0.32	1	04/12/05	04/14/05	KWG0505923	
2-Nitrotoluene	ND	U	2.0	0.32	1	04/12/05	04/14/05	KWG0505923	
4-Nitrotoluene	ND	U	2.0	0.50	1	04/12/05	04/14/05	KWG0505923	
3-Nitrotoluene	ND	U	2.0	0.34	1	04/12/05	04/14/05	KWG0505923	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1-Chloro-3-nitrobenzene	70	52-135	04/14/05	Acceptable

6/9/05

Comments:

LDC #: 13575D40 **VALIDATION COMPLETENESS WORKSHEET** Date: 6/13/05
SDG #: K2502575 Level III/IV Page: 1 of 1
Laboratory: Columbia Analytical Services Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: HPLC Explosives (EPA SW 846 Method 8330)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 4/5/05
IIa.	Initial calibration	A	
IIb.	Calibration verification	A	7D8ICV
III.	Blanks	A	
IVa.	Surrogate recovery	A	
IVb.	Matrix spike/Matrix spike duplicates	N	client specified
IVc.	Laboratory control samples	A	LCS/D
V.	Target compound identification	A	Not reviewed for Level III validation.
VI.	Compound Quantitation and CRQLs	A	Not reviewed for Level III validation.
VII.	System Performance	A	Not reviewed for Level III validation.
VIII.	Overall assessment of data	A	
IX.	Field duplicates	ND	D = 1 + 2
X.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

1	TO63-193-GW01-Dup W	11	KWG0505923-3	21		31	
2	TO63-193-GW01	12		22		32	
3	TO63-191-GW01**	13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes: _____

LDC #: 13575D40
SDG #: K3502575

VALIDATION FINDINGS CHECKLIST

Reviewer: a
2nd Reviewer: [illegible]

Method: ____ GC ✓ HPLC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Was a linear fit used for evaluation? If yes, were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation? If Yes, what was the acceptance criteria used?		✓		
Did the initial calibration meet the curve fit acceptance criteria?			✓	
Were the RT windows properly established?	✓			
IV. Continuing calibration				
What type of continuing calibration calculation was performed? ✓ %D or ___ %R	✓			
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 15%.0 or percent recoveries 85-115%?	✓			
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?	✓			
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.		✓		
Was a MS/MSD analyzed every 20 samples of each matrix?		✓		
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			

LDC #: 13575D40
SDG #: K2502575

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: [illegible]

Validation Area	Yes	No	NA	Findings/Comments
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Were field duplicate pairs identified in this SDG?	✓			
Were target compounds idetected in the field duplicates?		✓		
XV. Field blanks				
Were field blanks identified in this SDG?		✓		
Were target compounds detected in the field blanks?			✓	

LDC #: 13575D40
SDG #: 0502575

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: Q
2nd Reviewer: [illegible]

METHOD: GC_____HPLC ✓

The calibration Factor (CF), average CF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

CF = A/C
average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

A = Area of compound,
C = Concentration of compound,
S = Standard deviation of the CF
X = Mean of the CFs

#	Standard ID	Calibration Date	Compound	Reported CF (/ std)	Recalculated CF (/ std)	Reported Average CF (initial)	Recalculated Average CF (initial)	Reported %RSD	Recalculated %RSD
1	ICAL	3/8/05	HMX	88400	88400	90800	90800	10.2	10.2
			2,4,6-TNT	252000	252000	257000	257000	5.4	5.4
2									
3									
4									

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13575D40
SDG #: K0502575

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: G
2nd Reviewer: S

METHOD: GC_____HPLC__✓__

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. CF - CF)/ave. CF
CF = A/C

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(Ical)/ CCV Conc.	Reported CF/Conc. CCV	Recalculated CF/Conc. CCV	Reported %D	Recalculated %D
1	04140010	4/14/05	HMX	90800	91600	91600	1	1
			2,4,6-TNT	257000	257000	257000	3	2
2								
3								
4								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC # 13575040
SDG #: K250257S

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: 9
2nd reviewer: 9

METHOD: ___ GC √ HPLC

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 3

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
1-chloro-3-nitrobenzene	* c18	12.5	8.80	70	70	0

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference

LDC #: 13575D40
SDG #: K0502575

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer: T
2nd Reviewer: S

METHOD: ___ GC ✓ HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC - SC)/SA

Where SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentration

RPD =(({SSCLCS - SSCLCSD} * 2) / (SSCLCS + SSCLCSD))*100

LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample duplicate

LCS/LCSD samples: KWG0505923-1 / -2

Compound	Spike Added (ug/L)		Sample Conc. (ug/L)	Spike Sample Concentration (ug/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	---	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)											
Diesel (8015)											
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)	100	100	-	83.4	85.1	83	83	87	87	4	4
2,4,6-Trinitrotoluene (8330)	↓	↓	-	84.3	85.3	84	82	87	87	3	3

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13575D40
SDG #: 1050375

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: ___ GC ✓ HPLC

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10% of the reported results?

Concentration= (A)(Fv)(Df) / (RF)(Vs or Ws)(%S/100)

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound In the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID. 3 Compound Name NO

Concentration = _____

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications

Comments: _____

SAMPCALew.wpd